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PATENT  
Attorney Docket No.: 021044-000600US

Assistant Commissioner for Patents  
Washington, D.C. 20231

On May 23, 2002  
TOWNSEND and TOWNSEND and CREW LLP  
By: [Signature]



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

MASUDA et al.

Application No.: 09/998,667

Filed: December 3, 2001

For: TRAC1: MODULATORS OF  
LYMPHOCYTE ACTIVATION

Examiner: Not yet assigned

Art Unit: 1653

INFORMATION DISCLOSURE  
STATEMENT UNDER 37 CFR §1.97 and  
§1.98

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

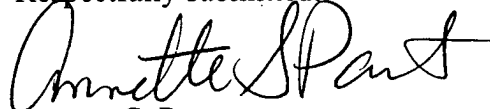
The references cited on attached form PTO/SB/08A and PTO/SB/08B are being called to the attention of the Examiner. Copies of the references are enclosed. It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no

representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

Applicant believes that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action. However, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Annette S. Parent". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Annette S. Parent  
Reg. No. 42,058

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
Tel: 415-576-0200  
Fax: 415-576-0300  
ASP:dk

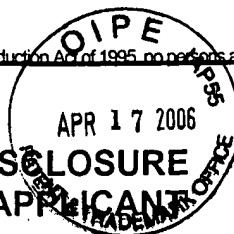
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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of

**Complete if Known**

|                        |                  |
|------------------------|------------------|
| Application Number     | 09/998,667       |
| Filing Date            | December 3, 2001 |
| First Named Inventor   | Masuda, Esteban  |
| Art Unit               | 1653             |
| Examiner Name          | Not yet assigned |
| Attorney Docket Number | 021044-000600US  |

**U.S. PATENT DOCUMENTS**

| Examiner | Cite No. <sup>1</sup> | Document Number                          | Publication Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited Document | Pages, Columns, Lines, Where<br>Relevant Passages or Relevant<br>Figures Appear |
|----------|-----------------------|--|--------------------------------|--|---|
|          |                       | Number Kind Code <sup>2</sup> (if known) |                                |  |   |
|          | AA                    | US-                                      |                                |  |   |
|          | AB                    | US-                                      |                                |  |   |
|          | AC                    | US-                                      |                                |  |   |
|          | AD                    | US-                                      |                                |  |   |
|          | AE                    | US-                                      |                                |  |   |
|          | AF                    | US-                                      |                                |  |   |
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|          | AS                    | US-                                      |                                |  |   |
|          | AT                    | US-                                      |                                |  |   |

**FOREIGN PATENT DOCUMENTS**

| Examiner<br>Initials* | Cite<br>No. <sup>1</sup> | Foreign Patent Document   |  | Publication Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited<br>Document | Pages, Columns, Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear | T <sup>6</sup> |
|-----------------------|--------------------------|---------------------------|--|--------------------------------|---|--|----------------|
|                       |                          | Country Code <sup>3</sup> | Number <sup>4</sup><br>Kind Code <sup>5</sup> (if known) |                                |   |  |                |
|                       | AU                       |                           |  |                                |   |  |                |
|                       | AV                       |                           |  |                                |   |  |                |
|                       | AW                       |                           |  |                                |   |  |                |
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|                       | BA                       |                           |  |                                |   |  |                |
|                       | BB                       |                           |  |                                |   |  |                |

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet

2

of

**Complete if Known**

|                        |                  |
|------------------------|------------------|
| Application Number     | 09/998,667       |
| Filing Date            | December 3, 2001 |
| First Named Inventor   | Masuda, Esteban  |
| Art Unit               | 1653             |
| Examiner Name          | Not yet assigned |
| Attorney Docket Number | 021044-000600US  |

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

| Examiner<br>Initials * | Cite<br>No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup> |
|------------------------|--------------------------|---|----------------|
|                        | BC                       | Accession No. XM-008732, submitted 06 February 2002, National Center for Biotechnology Information, NIH, Bethesda, MD 20894, USA  |                |
|                        | BD                       | Accession No. AK000463, submitted 15 February 2000, Sumio Sugano, Institute of Medical Science, University of Tokyo, Department of Virology, Shirokane-dai, 4-6-1, Minato-ku, Tokyo 108-8639, Japan.  |                |
|                        | BE                       | Accession No. NM-017831, submitted 02/15/2000.  |                |
|                        | BF                       |   |                |
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|                        | BH                       |   |                |
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|                        | BJ                       |   |                |
|                        | BK                       |   |                |
|                        | BL                       |   |                |
|                        | BM                       |   |                |

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

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Related Sequences, Protein, Taxonomy, LinkOut

LOCUS NM\_017831 1916 bp mRNA linear PRI 10-DEC-2001  
 DEFINITION Homo sapiens hypothetical protein FLJ20456 (FLJ20456), mRNA.  
 ACCESSION NM\_017831  
 VERSION NM\_017831.1 GI:8923428  
 KEYWORDS  
 SOURCE human.  
 ORGANISM Homo sapiens

2/15/00

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
 REFERENCE 1 (sites)  
 AUTHORS Watanabe,K., Kumagai,A., Itakura,S., Yamazaki,M., Tashiro,H.,  
 Ota,T., Suzuki,Y., Obayashi,M., Nishi,T., Shibahara,T., Tanaka,T.,  
 Nakamura,Y., Isogai,T. and Sugano,S.  
 TITLE NEDO human cDNA sequencing project  
 JOURNAL Unpublished (2000)  
 COMMENT PREDICTED REFSEQ: The mRNA record is supported by experimental  
 evidence; however, the coding sequence is predicted. The reference  
 sequence was derived from AK000463.1.

## FEATURES

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Revised: October 24, 2001.

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Entrez Nucleotide

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Nucleotide

Protein

Genome

Structure

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Taxonomy

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Display

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Save

Text

Add to Clipboard

☐ 1: AK000463. Homo sapiens cDNA...[gi:7020568]

Related Sequences, Protein, Taxonomy, LinkOut

LOCUS AK000463 1916 bp mRNA linear PRI 22-FEB-2000  
 DEFINITION Homo sapiens cDNA FLJ20456 fis, clone KAT05827.  
 ACCESSION AK000463  
 VERSION AK000463.1 GI:7020568  
 KEYWORDS oligo capping; fis (full insert sequence).  
 SOURCE Homo sapiens signet-ring cell carcinoma cell\_line:KATO III cDNA to mRNA, clone\_lib:KAT clone:KAT05827.

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

## REFERENCE 1 (sites)

AUTHORS Watanabe,K., Kumagai,A., Itakura,S., Yamazaki,M., Tashiro,H.,  
 Ota,T., Suzuki,Y., Obayashi,M., Nishi,T., Shibahara,T., Tanaka,T.,  
 Nakamura,Y., Isogai,T. and Sugano,S.

TITLE NEDO human cDNA sequencing project

JOURNAL Unpublished (2000)

## REFERENCE 2 (bases 1 to 1916)

AUTHORS Sugano,S., Suzuki,Y., Ota,T., Obayashi,M., Nishi,T., Isogai,T.,  
 Shibahara,T., Tanaka,T. and Nakamura,Y.

TITLE Direct Submission

JOURNAL Submitted (15-FEB-2000) Sumio Sugano, Institute of Medical Science,  
 University of Tokyo, Deptment of Virology; Shirokane-dai, 4-6-1,  
 Minato-ku, Tokyo 108-8639, Japan (E-mail:cdna@ims.u-tokyo.ac.jp,  
 Tel:81-3-5449-5286, Fax:81-3-5449-5416)

COMMENT NEDO human cDNA sequencing project supported by Ministry of  
 International Trade and Industry of Japan; cDNA full insert  
 sequencing: Research Association for Biotechnology; cDNA library  
 construction, 5'- & 3'-end one pass sequencing: Department of  
 Virology and Human Genome Center, Institute of Medical Science,  
 University of Tokyo (partly supported by Science and Technology  
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## FEATURES

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# Nucleotide

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1: XM\_008732. Homo sapiens hypo...[gi:18588856]

Related Sequences, Protein, Taxonomy, LinkOut

LOCUS XM\_008732 1916 bp mRNA linear PRI 07-FEB-2002

DEFINITION Homo sapiens hypothetical protein FLJ20456 (FLJ20456), mRNA.

ACCESSION XM\_008732

VERSION XM\_008732.4 GI:18588856

KEYWORDS .

SOURCE human.

ORGANISM Homo sapiens  
 Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (bases 1 to 1916)

AUTHORS NCBI Annotation Project.

TITLE Direct Submission

JOURNAL Submitted (06-FEB-2002) National Center for Biotechnology  
 Information, NIH, Bethesda, MD 20894, USA

COMMENT GENOME ANNOTATION REFSEQ: This model reference sequence was  
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 analysis using gene prediction method: BLAST. ~Also see:~  
 Documentation of NCBI's Annotation Process~ Evidence Viewer -  
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 On Feb 7, 2002 this sequence version replaced gi:17456245.

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ORIGIN

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Revised: October 24, 2001.

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On

April 18, 2002

TOWNSEND and TOWNSEND and CREW LLP

By:

[Signature]

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

MASUDA *et al.*

Application No.: 09/998,667

Filed: December 3, 2001

For: TRAC1: MODULATORS OF  
LYMPHOCYTE ACTIVATION

Examiner: Not yet assigned

Art Unit: 1653

COMMUNICATION UNDER

37 C.F.R. §§ 1.821-1.825

AND

PRELIMINARY AMENDMENT

U.S. Patent and Trademark Office  
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P.O. Box 2327  
Arlington, VA 22202

Sir:

In response to the request to comply with Requirements for Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures, 37 C.F.R. §§ 1.821-1.825, that accompanied the Notice to File Missing Parts of Nonprovisional Application mailed December 26, 2001, Applicants submit herewith the required paper copy and computer readable copy of the Sequence Listing. Please amend the specification in adherence with 37 C.F.R. §§ 1.821-1.825 as follows.

**In the Specification:**

Please replace the paragraph beginning at page 5, line 26, with the following:

--Figure 1: Figure 1A shows an amino acid of human wild-type TRAC1 (SEQ ID NO:1); Figure 1B shows a cDNA sequence of human wild-type TRAC1 (SEQ ID NO:2); Figure 1C shows a second, slightly shorter cDNA sequence of human wild type TRAC1 (SEQ ID NO:3); Figure 1D shows a cDNA sequence encoding a truncated version of TRAC1 (SEQ ID NO:4; nucleotides 127-891 of SEQ ID NO:3); Figure 1E shows a genomic sequence of human wild type TRAC1 (SEQ ID NO:5); and Figure 1F shows a cDNA (SEQ ID NO:6) and amino acid sequence (SEQ ID NO:7) for mouse wild type TRAC1.--

Please replace the paragraph beginning at page 6, line 11, with the following:

--Figure 7 shows that TRAC1 (FLJ20456) (SEQ ID NO:1) is similar to two sequences (SEQ ID NOS:8 and 9) with ring domains.--

Please replace the paragraph beginning at page 6, line 21, with the following:

--Figure 13A shows point mutations in conserved cysteine residues of the TRAC1 ring finger domain (SEQ ID NOS:10-17). Figure 13B shows point mutations in the conserved cysteine residues of the TRAC1 ring finger domain disrupt ligase activity.--

Please replace the paragraph beginning at page 12, line 30, with the following:

--The terms "identical" or percent "identity," in the context of two or more nucleic acids or polypeptide sequences, refer to two or more sequences or subsequences

that are the same or have a specified percentage of amino acid residues or nucleotides that are the same (i.e., about 60% identity, preferably 65%, 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or higher identity over a specified region (e.g., a nucleotide sequence of SEQ ID NO:2), when compared and aligned for maximum correspondence over a comparison window or designated region) as measured using a BLAST or BLAST 2.0 sequence comparison algorithms with default parameters described below, or by manual alignment and visual inspection (*see, e.g.*, NCBI web site <http://www.ncbi.nlm.nih.gov/BLAST/> or the like). Such sequences are then said to be "substantially identical." This definition also refers to, or may be applied to, the complement of a test sequence. The definition also includes sequences that have deletions and/or additions, as well as those that have substitutions. As described below, the preferred algorithms can account for gaps and the like. Preferably, identity exists over a region that is at least about 25 amino acids or nucleotides in length, or more preferably over a region that is 50-100 amino acids or nucleotides in length.--

Please replace the paragraph beginning at page 39, line 22, with the following:

--Common linkers such as peptides, polyethers, and the like can also serve as tags, and include polypeptide sequences, such as poly Gly sequences of between about 5 and 200 amino acids (SEQ ID NO:18). Such flexible linkers are known to persons of skill in the art. For example, poly(ethylene glycol) linkers are available from Shearwater Polymers, Inc. Huntsville, Alabama. These linkers optionally have amide linkages, sulfhydryl linkages, or heterofunctional linkages.--

Please insert the accompanying paper copy of the Sequence Listing, page numbers 1 to 13, at the end of the application.

**In the Claims:**

Please amend claims 24 and 33 as follows:

24. (Amended) A method for identifying a compound capable of interfering with binding of an TRAC1 polypeptide or fragment thereof, the method comprising the steps of:

(i) combining an TRAC1 polypeptide or fragment thereof with an E2 ubiquitin-conjugating enzyme polypeptide and the compound, wherein the TRAC1 polypeptide or fragment thereof is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1; and

(ii) determining the binding of the TRAC1 polypeptide or fragment thereof to the E2 ubiquitin-conjugating enzyme polypeptide.

33. (Amended) An isolated complex comprising a TRAC1 polypeptide or fragment thereof bound to an E2 ubiquitin-conjugating enzyme polypeptide, wherein the TRAC1 polypeptide or fragment thereof is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1.

**REMARKS**

Claims 1-46 are pending in this application. Claims 24 and 33 have been amended. The amendments to claims 24 and 33 correct the assigned identifiers for SEQ ID NO: designated in these claims. The claim language in claims 24 and 33 refer to amino acid sequences, whereas SEQ ID NO:2 is the corresponding nucleic acid sequence for which the amended SEQ ID NO:1 pertains.

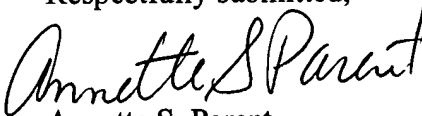
Applicants request entry of this amendment in adherence with 37 C.F.R. §§1.821 to 1.825. This amendment is accompanied by a floppy disk containing the above named sequences, SEQ ID NOS:1-18, in computer readable form, and a paper copy of the sequence information which has been printed from the floppy disk.

The information contained in the computer readable disk was prepared through the use of the software program "PatentIn" and is identical to that of the paper copy. This amendment contains no new matter.

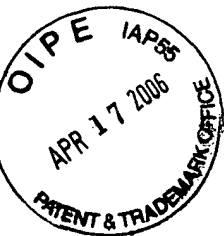
Attached hereto is a marked-up version of the changes made to the Specification and Claims by the current Amendment. The attached pages are captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE."** As a convenience to the Examiner, a complete set of the Claims, as amended herein, is also attached to this Amendment as an Appendix entitled **"PENDING CLAIMS WITH ENTRY OF THE AMENDMENT."**

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

  
Annette S. Parent  
Reg. No. 42,058

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ASP:dmw



**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Specification:**

Paragraph beginning at line 26 of page 5 has been amended as follows:

Figure 1: Figure 1A shows an amino acid of human wild-type TRAC1 (SEQ ID NO:1); Figure 1B shows a cDNA sequence of human wild-type TRAC1 (SEQ ID NO:2); Figure 1C shows a second, slightly shorter cDNA sequence of human wild type TRAC1 (SEQ ID NO:3); Figure 1D shows a cDNA sequence encoding a truncated version of TRAC1 (SEQ ID NO:4; nucleotides 127-891 of SEQ ID NO:3); Figure 1E shows a genomic sequence of human wild type TRAC1 (SEQ ID NO:5); and Figure 1F shows a cDNA (SEQ ID NO:6) and amino acid sequence (SEQ ID NO:7) for mouse wild type TRAC1.

Paragraph beginning at line 11 of page 6 has been amended as follows:

Figure 7 shows that TRAC1 (FLJ20456) (SEQ ID NO:1) is similar to two sequences (SEQ ID NOS:8 and 9) with ring domains.

Paragraph beginning at line 21 of page 6 has been amended as follows:

Figure 13A shows point mutations in conserved cysteine residues of the TRAC1 ring finger domain (SEQ ID NOS:10-17). Figure 13B shows point mutations in the conserved cysteine residues of the TRAC1 ring finger domain disrupt ligase activity.



Paragraph beginning at line 30 of page 12 has been amended as follows:

The terms "identical" or percent "identity," in the context of two or more nucleic acids or polypeptide sequences, refer to two or more sequences or subsequences that are the same or have a specified percentage of amino acid residues or nucleotides that are the same (i.e., about 60% identity, preferably 65%, 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or higher identity over a specified region (e.g., a nucleotide sequence of SEQ ID NO:2), when compared and aligned for maximum correspondence over a comparison window or designated region) as measured using a BLAST or BLAST 2.0 sequence comparison algorithms with default parameters described below, or by manual alignment and visual inspection (*see, e.g.*, NCBI web site <http://www.ncbi.nlm.nih.gov/BLAST/> or the like). Such sequences are then said to be "substantially identical." This definition also refers to, or may be applied to, the complement of a test sequence. The definition also includes sequences that have deletions and/or additions, as well as those that have substitutions. As described below, the preferred algorithms can account for gaps and the like. Preferably, identity exists over a region that is at least about 25 amino acids or nucleotides in length, or more preferably over a region that is 50-100 amino acids or nucleotides in length. ~~nu~~

Paragraph beginning at line 22 of page 39 has been amended as follows:

Common linkers such as peptides, polyethers, and the like can also serve as tags, and include polypeptide sequences, such as poly Gly gly sequences of between about 5 and 200 amino acids (SEQ ID NO:18). Such flexible linkers are known to persons of skill in the art. For example, poly(ethylene glycol) linkers are available from Shearwater Polymers, Inc. Huntsville, Alabama. These linkers optionally have amide linkages, sulfhydryl linkages, or heterofunctional linkages.

**In the Claims:**

Claims 24 and 33 have been amended as follows:

24. (Amended) A method for identifying a compound capable of interfering with binding of an TRAC1 polypeptide or fragment thereof, the method comprising the steps of:

(i) combining an TRAC1 polypeptide or fragment thereof with an E2 ubiquitin-conjugating enzyme polypeptide and the compound, wherein the TRAC1 polypeptide or fragment thereof is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1 ~~SEQ ID NO:2~~; and

(ii) determining the binding of the TRAC1 polypeptide or fragment thereof to the E2 ubiquitin-conjugating enzyme polypeptide.

33. (Amended) An isolated complex comprising a TRAC1 polypeptide or fragment thereof bound to an E2 ubiquitin-conjugating enzyme polypeptide, wherein the TRAC1 polypeptide or fragment thereof is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1 ~~SEQ ID NO:2~~.

**PENDING CLAIMS WITH ENTRY OF THE AMENDMENT**

1. (As filed) A method for identifying a compound that modulates T lymphocyte activation, the method comprising the steps of:

(i) contacting the compound with a TRAC1 polypeptide or a fragment thereof, the polypeptide or fragment thereof encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1; and

(ii) determining the functional effect of the compound upon the TRAC1 polypeptide.

2. (As filed) The method of claim 1, wherein the functional effect is measured *in vitro*.

3. (As filed) The method of claim 2, wherein the functional effect is a physical effect.

4. (As filed) The method of claim 2, wherein the functional effect is a chemical effect.

5. (As filed) The method of claim 4, wherein the functional effect is determined by measuring ligase activity.

6. (As filed) The method of claim 1, wherein the polypeptide is expressed in a host cell.

7. (As filed) The method of claim 6, wherein the functional effect is a physical effect.

8. (As filed) The method of claim 6, wherein the functional effect is a chemical or phenotypic effect.

9. (As filed) The method of claim 6, wherein the host cell is primary T lymphocyte.

10. (As filed) The method of claim 6, wherein the host cell is a cultured T cell.

11. (As filed) The method of claim 10, wherein the host cell is a Jurkat cell.

12. (As filed) The method of claim 6, wherein the chemical or phenotypic effect is determined by measuring CD69 expression, intracellular Ca<sup>2+</sup> mobilization, Ca<sup>2+</sup> influx, ligase activity, or lymphocyte proliferation.

13. (As filed) The method of claim 1, wherein modulation is inhibition of T lymphocyte activation.

14. (As filed) The method of claim 1, wherein the polypeptide is recombinant.

15. (As filed) The method of claim 1, wherein the TRAC1 polypeptide comprises an amino acid sequence of SEQ ID NO:1.

16. (As filed) The method of claim 1, wherein the TRAC1 polypeptide is encoded by a nucleic acid comprising a nucleotide sequence of SEQ ID NO:2.

17. (As filed) The method of claim 1, wherein the compound is an antibody.

18. (As filed) The method of claim 1, wherein the compound is an antisense molecule.

19. (As filed) The method of claim 1, wherein the compound is a small organic molecule.

20. (As filed) The method of claim 1, wherein the compound is a peptide.

21. (As filed) The method of claim 20, wherein the peptide is circular.

22. (As filed) A method for identifying a compound that modulates T lymphocyte activation, the method comprising the steps of:

(i) contacting a T cell comprising a TRAC1 polypeptide or fragment thereof with the compound, the TRAC1 polypeptide or fragment thereof encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1; and

(ii) determining the chemical or phenotypic effect of the compound upon the cell comprising the TRAC1 polypeptide or fragment thereof, thereby identifying a compound that modulates T lymphocyte activation.

23. (As filed) A method for identifying a compound that modulates T lymphocyte activation, the method comprising the steps of:

(i) contacting the compound with a TRAC1 polypeptide or a fragment thereof, the TRAC1 polypeptide or fragment thereof encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1;

(ii) determining the physical effect of the compound upon the TRAC1 polypeptide; and

(iii) determining the chemical or phenotypic effect of the compound upon a cell comprising the TRAC1 polypeptide or fragment thereof, thereby identifying a compound that modulates T lymphocyte activation.

24. (Amended) A method for identifying a compound capable of interfering with binding of an TRAC1 polypeptide or fragment thereof, the method comprising the steps of:

(i) combining an TRAC1 polypeptide or fragment thereof with an E2 ubiquitin-conjugating enzyme polypeptide and the compound, wherein the TRAC1 polypeptide or fragment thereof is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1; and

(ii) determining the binding of the TRAC1 polypeptide or fragment thereof to the E2 ubiquitin-conjugating enzyme polypeptide.

25. (As filed) The method of claim 24, wherein the TRAC1 polypeptide or fragment thereof has ligase activity.

26. (As filed) The method of claim 24, wherein the E2 ubiquitin-conjugating enzyme polypeptide is selected from the group consisting of Ubc5, Ubc7, and Ubc8.

27. (As filed) The method of claim 24, wherein the TRAC1 polypeptide or fragment thereof and the E2 ubiquitin-conjugating enzyme polypeptide are combined first.

28. (As filed) The method of claim 24, wherein the reaction is performed *in vitro*.

29. (As filed) The method of claim 24, wherein the TRAC1 polypeptide or fragment thereof and the E2 ubiquitin-conjugating enzyme polypeptide are expressed in a cell.

30. (As filed) The method of claim 29, wherein the cell is a yeast cell.

31. (As filed) The method of claim 30, wherein the TRAC1 polypeptide or fragment thereof is fused to a heterologous polypeptide.

32. (As filed) The method of claim 24, wherein the binding of the TRAC1 polypeptide or fragment thereof to the E2 ubiquitin-conjugating enzyme polypeptide is determined by measuring reporter gene expression.

33. (Amended) An isolated complex comprising a TRAC1 polypeptide or fragment thereof bound to an E2 ubiquitin-conjugating enzyme polypeptide, wherein the TRAC1 polypeptide or fragment thereof is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1.

34. (As filed) The complex of claim 33, wherein the E2 ubiquitin-conjugating enzyme polypeptide is selected from the group consisting of Ubc5, Ubc7, and Ubc8.

35. (As filed) A method of modulating T lymphocyte activation in a subject, the method comprising the step of administering to the subject a therapeutically effective amount of a compound identified using the method of claim 1.

36. (As filed) The method of claim 35, wherein the subject is a human.

37. (As filed) The method of claim 35, wherein the compound is an antibody.

38. (As filed) The method of claim 35, wherein the compound is an antisense molecule.

39. (As filed) The method of claim 35, wherein the compound is a small organic molecule.

40. (As filed) The method of claim 35, wherein the compound is a peptide.

41. (As filed) The method of claim 40, wherein the peptide is circular.

42. (As filed) The method of claim 35, wherein the compound inhibits T lymphocyte activation.

43. (As filed) A method of modulating T lymphocyte activation in a subject, the method comprising the step of administering to the subject a therapeutically effective amount of a TRAC1 polypeptide, the polypeptide encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1.



44. (As filed) The method of claim 43, wherein the TRAC1 polypeptide comprises an amino acid sequence of SEQ ID NO:1.

45. (As filed) A method of modulating T lymphocyte activation in a subject, the method comprising the step of administering to the subject a therapeutically effective amount of a nucleic acid encoding a TRAC1 polypeptide, wherein the nucleic acid hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of SEQ ID NO:1.

46. (As filed) The method of claim 45, wherein the TRAC1 nucleic acid comprises a nucleotide sequence of SEQ ID NO:2.